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Application No. 10/523,281

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IN THE CLAIMS

This listing of claims replaces all prior listings:

1. (Currently Amended) A magnetoresistive device having:

an intermediate layer; and

~~a pair of ferromagnetic layers opposed to each other to obtain variations in magnetoresistance by an electric current flowing in a direction perpendicular to the film plane, said pair of ferromagnetic layers comprising~~

a fixed magnetization layer located adjacently directly below and in contact with said intermediate layer, said fixed magnetization layer is a crystalline ferromagnetic material that is made of an alloy of at least one of the following iron, nickel and cobalt; and

a free magnetization layer located adjacently above said intermediate layer, said free magnetization layer is an amorphous ferromagnetic material that is made of an alloy of an iron group element and metalloid elements, rare earth elements and valve metals,

wherein,

said fixed magnetization layer and said free magnetization layer are a pair of ferromagnetic layers opposed to each other to obtain variations in magnetoresistance by an electric current flowing in a direction perpendicular to the film plane,

~~said fixed magnetization layer is a crystalline ferromagnetic material that is an alloy of at least one of the following iron, nickel and cobalt and said free magnetization layer is an amorphous ferromagnetic material that is an alloy of an iron group element and metalloid elements, rare earth elements and valve metals such that the compositions of the fixed magnetization layer and the free magnetization layer result in~~ the magnetoresistive device has a

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tunnel magnetic resistive (TMR) ratio greater than 45%, a coercivity value less than 6% and a rectangle ratio greater than 90%.

2. (Original) A magnetoresistive device according to claim 1, characterized in that said magnetoresistive device has a laminated ferri structure.

3. (Original) A magnetoresistive device according to claim 1, characterized in that said magnetoresistive device is a tunnel magnetoresistive device using a tunnel barrier layer made of an insulating material or a semiconducting material as said intermediate layer.

4. (Currently Amended) A magnetic memory apparatus comprising:
a word line;
a bit line; and
a magnetoresistive device sandwiched by said word line and said bit line, said magnetoresistive device having ~~an intermediate layer and a pair of ferromagnetic layers opposed to each other to obtain variations in magnetoresistance by an electric current flowing in a direction perpendicular to the film plane, said ferromagnetic layers comprising (1) a fixed magnetization layer located adjacently directly below and in contact with said intermediate layer, said fixed magnetization layer is a crystalline ferromagnetic material that is made of an alloy of at least one of the following iron, nickel and cobalt and (2) a free magnetization layer located adjacently above said intermediate layer, said free magnetization layer is an amorphous ferromagnetic material that is made of an alloy of an iron group element and metalloid elements, rare earth elements and valve metals,~~

wherein,

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said fixed magnetization layer and said free magnetization layer are a pair of ferromagnetic layers opposed to each other to obtain variations in magnetoresistance by an electric current flowing in a direction perpendicular to the film plane.

~~said fixed magnetization layer is a crystalline ferromagnetic material that is an alloy of at least one of the following iron, nickel and cobalt and said free magnetization layer is an amorphous ferromagnetic material that is an alloy of an iron group element and metalloid elements, rare earth elements and valve metals such that the compositions of the fixed magnetization layer and the free magnetization layer result in~~ the magnetoresistive device has a tunnel magnetic resistive (TMR) ratio greater than 45%, a coercivity value less than 6% and a rectangle ratio greater than 90%.

5. (Original) A magnetic memory apparatus according to claim 4, characterized in that said magnetoresistive device has a laminated ferri structure.

6. (Original) A magnetic memory apparatus according to claim 4, characterized in that said magnetoresistive device is a tunnel magnetoresistive device using a tunnel barrier layer made of an insulating material or a semiconducting material as said intermediate layer.